



**Center for Advanced Power Engineering
Research**

Online Video Based Classes – Experiences

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On-line Lecture Experiences

NC Engineering OnLine (EOL) program

Live on-campus lectures are captured in a studio class and made available to EOL students

MB Experience-Statistics

- 3 classes each year
- 8-12 students per class
- Majority of students are working professionals

MB Experience

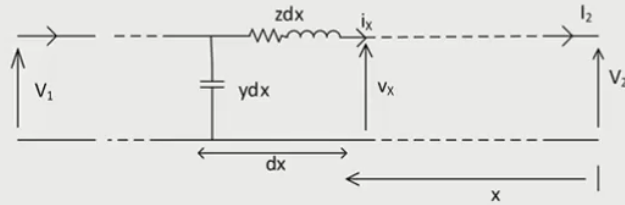
Observation:

It is much more difficult to follow technical lectures on video than live



iii) Long line, $l \geq 150$ mi

distributed parameter model



Wave Equation:

$$V_x = V_2 \cosh Yx + Z_c I_2 \sinh Yx$$

$$I_x = I_2 \cosh Yx + (V_2/Z_c) \sinh Yx$$

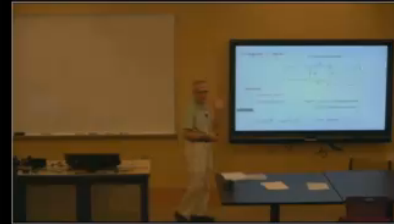
Where, $Y = \sqrt{yz} = \alpha + j\beta$ Propagation constant

$Z_c = \sqrt{z/y}$ Characteristic impedance



$$V_x = A_1 e^{\alpha x} e^{j\beta x} + A_2 e^{-\alpha x} e^{-j\beta x}$$

$\lambda = 2\pi/\beta$ wavelength



CUSP

Distributed-Parameter Representation

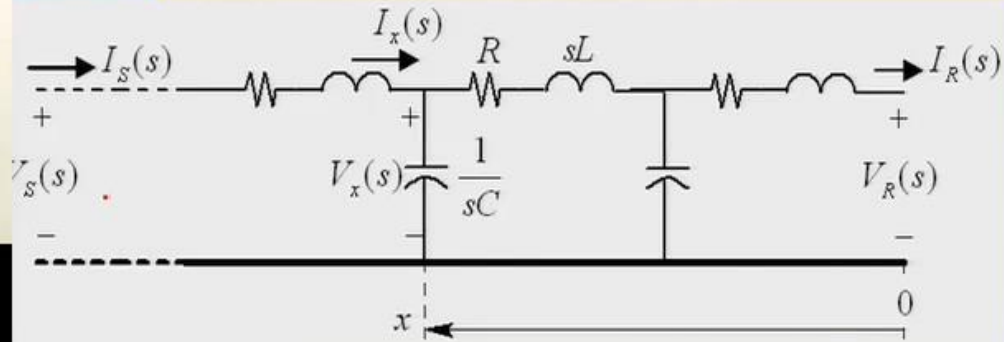


Fig. 4-9 Distributed per-phase transmission line (G not shown).

- Per-Phase

$$s = j\omega$$

$$V(s) = \bar{V} = V \angle \phi_v$$

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25

Experiences

- Performance of EOL section is consistently lower – 5-10 %
- EOL students usually ask more questions on class material, seems to get confused more easily than on-campus students
- Observed weakness on background
- They may watch the video with higher speeds!

Thanks !

